



US Army Corps
of Engineers
Kansas City District

TUTTLE CREEK DAM

FACT SHEET

April 2001

HYDROLOGIC RE-EVALUATION

Over the years, the Corps of Engineers has developed a number of sophisticated techniques for operating its system of flood control reservoirs. Generally these operations can be divided into three categories, day to day operations, operations during major floods (such as the 1993 flood) and operations for extreme floods where the safety and integrity of the dam is the paramount concern. This later category is now under evaluation at Tuttle Creek Lake.

The objective of the Hydrologic Re-Evaluation of Tuttle Creek Lake is to predict how the project would perform using the most up-to-date criteria for inflows resulting from a massive storm over the area that drains to the lake. The updated criteria was developed based on worldwide experience gained over the years since Tuttle Creek Lake was designed. It should be noted that the flows estimated by the new criteria are not much higher than the estimates used for the project's design.

The first task was to estimate the total amount of rainfall. A storm known as the Probable Maximum Precipitation (PMP) was imposed on the basin, and positioned in such a manner as to result in the maximum runoff into the lake. This storm dropped 23.6 inches of rain in a three day period and is believed to be the worst storm that could ever occur in the area. Standard computer models were used to simulate the drainage running into the lake, flowing through the lake, and out the emergency spillway in accordance with the lake operating manual. Flow through the spillway approximately 10 times larger than the flow during of the 1993 flood would be made under these circumstances.

The items of special interest in this study are the highest lake level resulting from this storm, the maximum flow through the spillway, and the distance from the lake level to the top of the dam that would be necessary to keep wind-driven waves from splashing over the top of the dam. Water flowing over the top of an earthen dam such as Tuttle Creek can cause the downstream face of the dam to erode and could result in a breach of the dam.

The studies indicate that the lake would not be expected to rise above the top of the dam during the flood if all of the Tainter gates are working properly. If two or more Tainter gates fail the dam could be overtopped. The studies also indicated that wind-driven waves could splash over the dam.

This fact sheet is published by the U.S. Army Corps of Engineers, the lead agency for the Tuttle Creek Dam Safety Assurance Program. Comments or questions about this fact sheet or the Dam Safety Assurance Program should be directed to Bill Empson of the Kansas City District, Corps of Engineers at (816) 983-3556 or by E-mail at tcdam.nwk@usace.army.mil. Questions or comments about lake operations or Tuttle Creek project office activities should be directed to the on-site Operations Manager, Brian McNulty at 785-539-8511. For additional information, visit our web site: <http://www.nwk.usace.army.mil/tcdam>



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